

Section 1: Identification

1.1. Product identifier

Product form : Substance
Product Identifier(s) : Hydroxyl-Terminated Polybutadiene (HTPB) Resin
CAS No : 69102-90-5

1.2. Recommended use of the chemical and restrictions on use

Use of the substance/mixture : Elastomers

1.3. Details of the supplier of the safety data sheet

2113 W 850 N
Cedar City UT 84721
Tel: 435-865-7120
Fax: 435-865-7120
www.rocketmotorparts.com
For non-emergency product information:
Phone: 435-865-7100 or Email:
customerservice@aerotech-rocketry.com

1.4. Emergency telephone number

Emergency number : INFOTRAC, US: 1-352-323-3500 INFOTRAC, International: 1-800-535-5053
RCS Rocket Motor Parts, Inc.: 435-865-7100 (Language: English only)

Section 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

GHS-US labeling

Hazard statements (GHS-US) : **This material has no classified hazards under 29 CFR 1910.1200.**
Precautionary statements (GHS-US) : Precautionary statement not required.

2.3. Hazards not otherwise classified

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

2.5. Additional information

Based on conditions common to industrial workplace use of this product : Contact with skin or eyes with hot material may cause serious thermal burns to skin or eyes.
Vapors formed when material is processed at high temperatures may be irritating to the eyes and upper respiratory tract.

Section 3: Composition/Information on ingredients

3.1. Substance

Chemical name : 1,3-Butadiene, homopolymer, hydroxy-terminated
CAS No : 69102-90-5

3.2. Mixture

Not applicable

Section 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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- First-aid measures after skin contact : Wash with plenty of soap and water. If irritation persists, consult a doctor. Heated Material: For serious burns from heated material, get medical attention. In case of skin contact, immediately immerse in or flush with clean, cold water.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Obtain medical attention if pain, blinking, tears or redness persist.
- First-aid measures after ingestion : Rinse mouth out with water. If necessary seek medical advice.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : Not expected to present a significant hazard under anticipated conditions of normal use.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Section 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog. Carbon dioxide. Foam. Dry chemical. Dry powder. Sand.
- Unsuitable extinguishing media : Use of heavy stream of water may spread fire.

5.2. Special hazards arising from the chemical

- Fire hazard : Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, can burn in open air or explode if confined.
- Explosion hazard : May form flammable/explosive vapor-air mixture.
- Hazardous decomposition products in case of fire : Carbon oxides (CO, CO₂). Toxic fumes. 1,3-butadiene. Hydrocarbons.

5.3. Advice for firefighters

- Firefighting instructions : Fight fire from safe distance and protected location. Avoid direct personal contact with liquid even after fire is out to prevent potentially serious burns. Use water spray or fog for cooling exposed containers. Apply aqueous extinguishing media carefully to prevent frothing/steam explosion. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Complete protective clothing. Self-contained breathing apparatus.
- Other information : Fires are typically very smoky.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- Emergency procedures for non-emergency personnel : Ensure adequate ventilation. Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures for emergency responders : No additional requirement.

6.2. Methods and material for containment and cleaning up

- For containment : Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite. Keep recovered product for subsequent disposal.
- Methods for cleaning up : Wash away residue with large amounts of water. Gather the product and place it in a spare container that has been suitably labeled.

6.3. Reference to other sections

See section 8. Exposure controls/personal protection.

Section 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Avoid contact with elevated temperature or molten product to prevent burns. Use only non-sparking tools. Steam drum heaters are recommended. If heating is necessary for drummed product, loosen or remove bung or lid before warming/heating product to avoid overpressurization in the drum. Eliminate all ignition sources if safe to do so.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Electrical equipment should conform to the National Electric Code. Containers which are opened should be properly resealed and kept upright to prevent leakage.
- Storage conditions : Keep container tightly closed. Store in a dry, cool area. Purge open drums with nitrogen before resealing.

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Storage temperature : 10 - 32 °C

Section 8: Exposure controls/personal protection

8.1. Occupational Exposure Limits

The following constituents are the only constituents of the product which have a PEL, TLV, or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

No additional information available

8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station.
Hand protection : Protective gloves. Do not use natural rubber gloves. Product used with solvents : wear thick (> 0.5 mm) nitrile gloves. Replace gloves immediately when torn or any change in appearance (dimension, color, flexibility, etc.) is noticed.
Eye protection : Safety glasses.
Skin and body protection : Wear suitable protective clothing.
Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Appearance : Viscous.
Color : Colorless to light yellow.
Odor : No data available
Odor threshold : No data available
pH : Not applicable
Relative evaporation rate (butyl acetate=1) : No data available
Melting point : No data available
Freezing point : No data available
Boiling point : > 300 °C
Flash point : > 205 °C Cleveland open cup (COC)
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapor pressure : No data available
Relative vapor density at 20 °C : No data available
Relative density : 0.9
Solubility : Water: practically insoluble
Log Kow : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : ~ 5000 mPa.s
Explosion limits : No data available

9.2. Other information

No additional information available

Section 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use.

10.2. Chemical stability

Stable under use and storage conditions as recommended in section 7.

10.3. Possibility of hazardous reactions

Cracks into gaseous and liquid products above 426 °C. Decomposes by polymerization above 204 °C. Once initiated, the reaction generates enough heat to continue spontaneously.

10.4. Conditions to avoid

Heat. Direct sunlight. High temperature.

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10.5. Incompatible materials

Strong oxidizing agents. Strong reducing agents. Strong acids. Free radical initiators/peroxides.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Ingestion. Skin and eye contact.

Acute toxicity : Not classified
Based on available data, the classification criteria are not met

POLY BD® R-45HTLO (69102-90-5)

LD50 oral rat	> 34600 mg/kg
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Skin corrosion/irritation : Not classified
Based on available data, the classification criteria are not met
Practically non-irritating (rabbit)

Serious eye damage/irritation : Not classified
Based on available data, the classification criteria are not met
Slight eye irritant (rabbit)

Respiratory or skin sensitization : Not classified
Based on available data, the classification criteria are not met
Does not cause cutaneous sensitization for guinea-pigs

Germ cell mutagenicity : Not classified
Lack of data

Carcinogenicity : Not classified
Lack of data

Reproductive toxicity : Not classified
Lack of data

Specific target organ toxicity (single exposure) : Not classified
Lack of data

Specific target organ toxicity (repeated exposure) : Not classified
Lack of data

Aspiration hazard : Not classified
Lack of data

Section 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

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Section 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Transfer to a safe disposal area in accordance with federal, state, and local regulations.

Section 14: Transport information

US Transport (DOT) for Bulk Shipments (Non-Bulk Shipments May Differ)

Not regulated by US DOT

Transport by sea (IMDG)

Not regulated by IMDG

Air transport (IATA)

Not regulated by IATA

Section 15: Regulatory information

15.1. US Federal regulations

EPA TSCA Status

All components of this product are listed or excluded from listing on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

SARA Section 313 Supplier Notification

This product contains no toxic chemicals in excess of the applicable de minimis concentration that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

SARA Section 311/312 Hazard Classes : Not applicable

Export Control Statement: This product and technical data related to this product are export controlled by the United States (US) Government. Exportation/international shipments of this product are subject to licensing by the US Government. Export, reexport or other diversion, either in the original form or after being incorporated in an intermediate process into other end-items, is STRICTLY PROHIBITED unless expressly authorized by the cognizant agency of the US Government. If you plan to export this material in some form, please contact RCS Rocket Motor Components, Inc. for more information.

Export Control Classification Number (ECCN): 1C111

15.2. International regulations

CANADA

No additional information available

National inventories

1,3-Butadiene, homopolymer, hydroxy-terminated (69102-90-5)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the Canadian DSL (Domestic Substances List)

Listed on the China Inventory of Existing Chemical Substances (IECSC)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS)

15.3. US State regulations

California Proposition 65 - This product contains, or may contain, trace quantities of a substance(s) known to the state of California to cause cancer and/or reproductive toxicity, not limited to any that may be listed below.

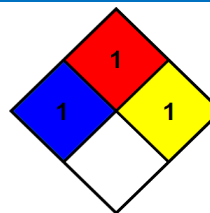
Section 16: Other information

NFPA (National Fire Protection Association)

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NFPA health hazard : 1
NFPA fire hazard : 1
NFPA reactivity : 1



HMIS III Rating

Health : 1
Flammability : 1
Physical Hazard : 1
Personal Protection : See section 8 of SDS

US OSHA LABEL as specified under 29 CFR §1910.1200 (f)

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Cedar City UT 84721
Tel: 435-865-7120 Fax: 435-865-7120
www.rocketmotorparts.com

This material has no classified hazards under 29 CFR 1910.1200.

Precautionary statement not required.

Version : 1

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MSDS ID: Hydroxyl-Terminated Polybutadiene (HTPB) Resin

The information contained in this Safety Data Sheet (SDS) is believed by RCS Rocket Motor Components, Inc. (RCS RMC) to be accurate on the date issued. However, materials may present unknown hazards and should be used with caution. Final determination of suitability and use of any material is the sole responsibility of the user. Neither RCS RMC nor any of its subsidiaries or affiliated companies assumes any liability whatsoever for the accuracy or completeness of the information contained herein or reliance thereto. If the material is repackaged, the user is responsible and must ensure that proper health, safety and other necessary information is included with the material and/or on the container. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING THE MATERIALS OR THE INFORMATION CONTAINED IN THIS SDS. ALTERATION OF THIS DOCUMENT IS STRICTLY PROHIBITED.